Huntleigh
HEALTHCARE

Autoexcel®

User Manual

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Safety

Before you connect the system pump to a mains socket, read carefully all the installation instructions in Section 4 – **Installation**.

The system has been designed to comply with regulatory safety standards including:

- BS5724, Part 1
- IEC601-1
- VDE 0750 : Teil 1
- UL544

For your own safety and the safety of the equipment always take the following precautions:

- Keep the pump away from sources of liquids
- Do not expose the system, especially the mattress, to naked flames, such as cigarettes etc.
- Do not store the system in direct sunlight
- Do not use hypercarbonate or phenolic based cleaning solutions
- Keep sharp objects away from the mattress
- Ensure that the system is clean and dry prior to storage
- Store the pump and overlay in the protective bags supplied
- Do not use the **Autoexcel** overlay on the bed base. It must always be used on top of an existing mattress. Failure to do so can put the patient at risk.
- We recommend the use of cot sides on the bed while the system is in use and the patient is positioned on top. Local policies regarding the use of cot sides should be taken into account.
- Keep these instructions handy for reference

SAFETY WARNING

The cover of this product is vapour permeable but not air permeable and may present a suffocation risk. It is the responsibility of the care giver to ensure that the user can use this product safely.

WARNINGS

Electrical equipment may be hazardous if misused, the pump case back should only be removed by authorised technical personnel.

Do not use the *Autoexcel* pump in the presence of flammable gases such as anaesthetic agents.

1. Introduction

About this Manual

This manual is your introduction to the **Autoexcel®** system, use it to initially set up the system and keep it handy as a reference for day-to-day routines and as a guide to maintenance.

Section 2 – **Clinical Applications**: gives examples of the type of patients that could benefit from this system.

Section 3 – **Product Description**: a technical description of the system.

Section 4 – **Installation**: explains how to set up and install the **Autoexcel** system.

Section 5 – **Operation**: a reference guide for day-to-day operation and contains important information on what to do in the event of a cardiac arrest.

Section 6 – **Cleaning**: routine cleaning and recommended laundering procedures.

Section 7 – **Troubleshooting**: routine maintenance procedures and solutions for minor problems that may occur.

Section 8 – **Warranty and Service**: details the warranty and what to do if the equipment requires servicing or repair.

Section 9 – **Routine Checks**: details periodic inspections of the pump and overlay.

Section 10 – **Technical Description**: a list of technical data.

About Autoexcel

The **Autoexcel** system is a micro-perforated air loss system comprising an overlay, top cover, tube set and pump. The system is used for the prevention and management of pressure sores. Transverse cells provide interface pressures below 20mmHg for over 50% of the cycle.

A stable pillow section is created by three cells permanently inflated which prevent the patient's head from rising and falling.

Contoured cells provide additional support at the sides, thus containing the patient in a central position on the overlay.

The **Autoexcel** system incorporates a unique **Auto-Matt**® sensor pad, which ensures that the patient is automatically supported at optimum pressures regardless of size, height, position or weight distribution.

The overlay is designed for use with standard hospital beds as well as most domestic beds. Users are able to employ established practises for lifting, turning and moving patients. Beds can also be adjusted or gatched in the normal way without impairing the overlay's pressure relieving performance.

A water resistant, vapour permeable cover is supplied which enhances patient comfort by preventing heat build-up whilst protecting the overlay interior from contamination. It is simple to clean in situ but can be easily removed for laundering.

In the event of cardiac arrest, the overlay can be quickly deflated in less than 10 seconds to allow cardiac resuscitation procedures to be performed.

The pump provides a dynamic system of inflating the support surface beneath the patient, cycling every 10 minutes to produce periods of pressure relief for the whole body.

2. Clinical Applications

The **Autoexcel** system, with its ability to provide reduced interface pressures in dynamic operating mode, is used for those patients who are at high risk from developing, or who have pressure ulcers.

A risk assessment tool combined with clinical judgement should be used when determining a patient's level of risk of developing pressure ulcers. Patient risk assessment should be an ongoing process as changes in the patient's condition may increase or decrease their risk level.

Indications

The **Autoexcel** system is appropriate for patients assessed to be at high risk of developing pressure ulcers, or with existing pressure ulcers up to and including grade 3 (EPUAP, 1998)[1].

The **Autoexcel** system is designed to operate in dynamic mode only which continuously changes the tissue pressure points, providing a high degree of pressure relief. The **Autoexcel** system can be used for patients weighing between 45-203kg (100-450lbs).

Contra-indications

The **Autoexcel** system should not be used for patients with unstable spinal fractures.

In the case of patients with other unstable fractures, where a moving surface could be harmful, advice should be obtained from the appropriate physician before using the **Autoexcel** system.

Patient In Chair

If the patient will be sitting in a chair for any period of time, it is strongly recommended that a pressure reducing or relieving seat cushion is used.

*The **Autoexcel** system is an aid to the prevention and management of pressure ulcers. If there is no improvement in the patient's condition, specialist advice should be sought.*

The above are guidelines only and should not replace clinical judgement or experience.

[1] *European Pressure Ulcer Advisory Panel (1998). Pressure Ulcer Treatment Guidelines, British Journal of Nursing 7(5):888-9.*

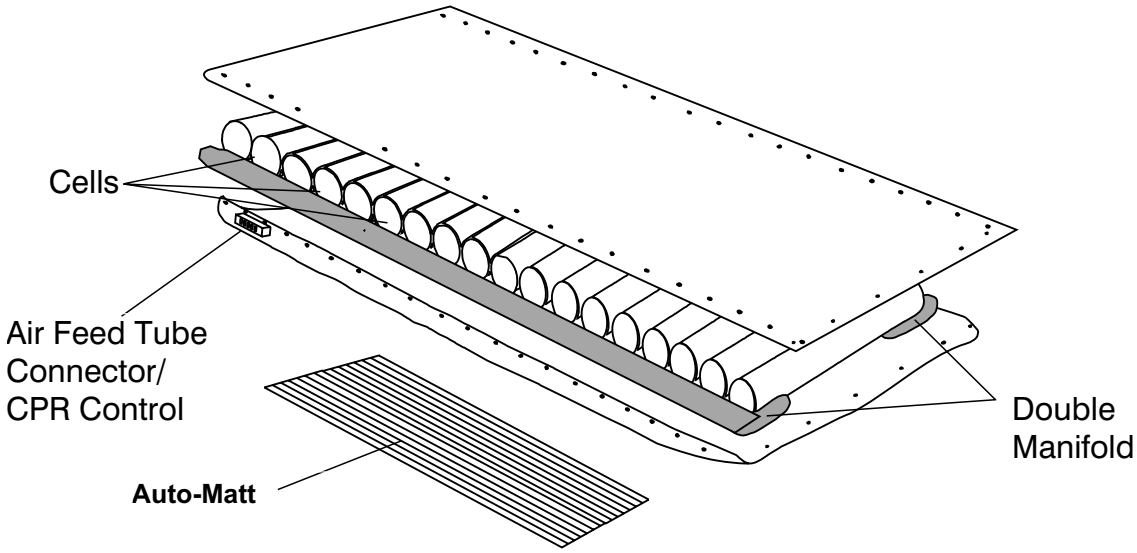
3. Product Description

Overlay

The **Autoexcel** overlay is comprised of a series of 18 individual cells, 15 of which inflate alternately. The best way of describing cell arrangement is that, if all cells were numbered 1 to 15, the odd number cells inflate simultaneously whilst the even number cells are deflated and then vice versa.

Micro-perforations enable air to circulate beneath the patient enhancing comfort and preventing heat build-up.

The three cells at the head end are permanently inflated, in order to give the patient a stable pillow section.



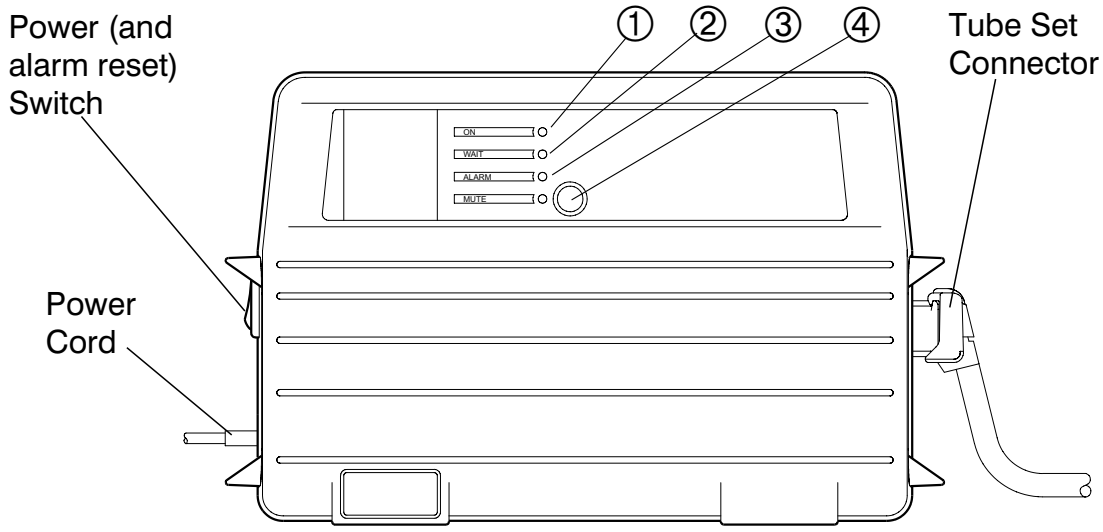
The sequence of dynamic pressure relief is :

- Phase 1 – odd numbered cells inflated for approximately 4 minutes.
- Phase 2 – total support period where all cells are inflated (cross-over) for approximately one minute.
- Phase 3 – even numbered cells inflated for approximately 4 minutes.
- Phase 4 – as phase 2 (one minute)

At the foot end of the overlay a 5 way connector serves to inflate and alternate the **Autoexcel** overlay, to control pressure and to deflate the overlay quickly in the event of cardiac arrest.

To reinflate the **Autoexcel** overlay, securely lock the connector on the tubeset to the manifold.

Pump



① Power ON indicator

② Wait indicator

③ Alarm indicator

④ Mute button and indicator

The pump comprises a rugged moulded case with non slip feet on the base and rear and an integral carry handle.

The unit has been designed to maintain sustained operation and to withstand prolonged use in the hospital and homecare environments. Weight has been minimised and is evenly distributed throughout the case with the centre of gravity beneath the carry handle.

The **On/Off** switch is situated on the side panel; other controls and indicators (lights) are located on the front panel which is recessed to prevent accidental operation.

The pump incorporates a sophisticated alarm system that differentiates between normal operation and genuine system faults. If an alarm situation is detected a flashing indicator will illuminate and an audible warning will sound.

Bed Bracket

The pump can be fixed to the foot end of a hospital style bed by the separate bed bracket which has been designed for simplicity and ease of use. It features a simple self adjusting mechanism that clips onto most common bed frames (18-50mm wide) and a hook that fits into the pump handle.

Once installed the pump is not likely to be accidentally dislodged from the end of the bed.

The pump can also be stood on the floor, either vertically or horizontally.

Tube-Set

The tube-set incorporates a flexible, compact anti-kink tube that is resistant to crushing and the obstruction of air flow. Each end has a quick connect system for easily connecting and disconnecting the air connection at the pump and overlay.

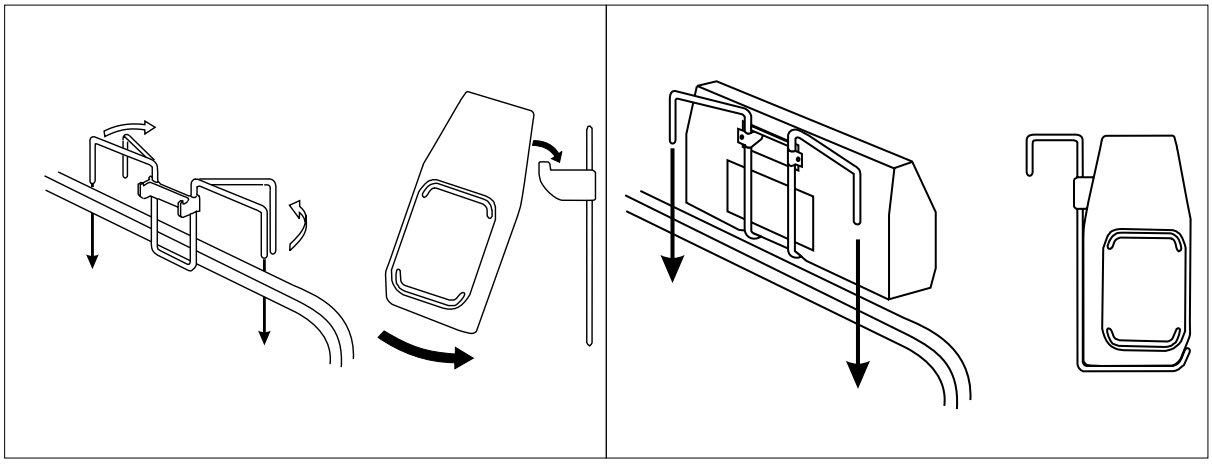
4. Installation

These instructions cover initial set up and operation of the **Autoexcel** system. More detailed information regarding controls, alarms and indicators is in Section 5.

Preparing the Pump and Overlay

Fitting the* Autoexcel *Pump

1. Remove the pump from the carton together with the overlay and cover. You should have the following items:
   - overlay with cover
   - pump and bed bracket
   - tube-set
2. The pump can be suspended from the bed foot rail by means of the hanging device or alternatively stood upright or on its back on any convenient horizontal surface.



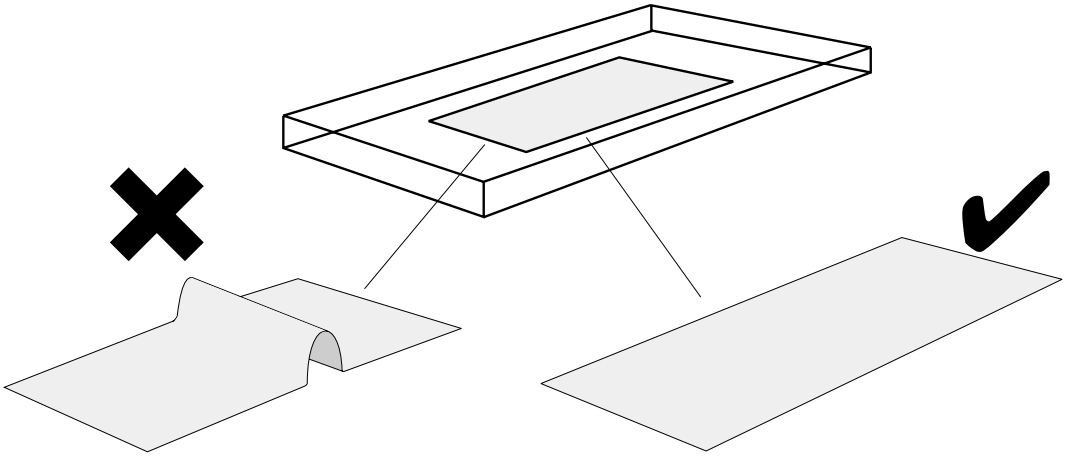
Old New

3. Check there are no protruding bed springs or similar sharp objects on the bed mattress surface.

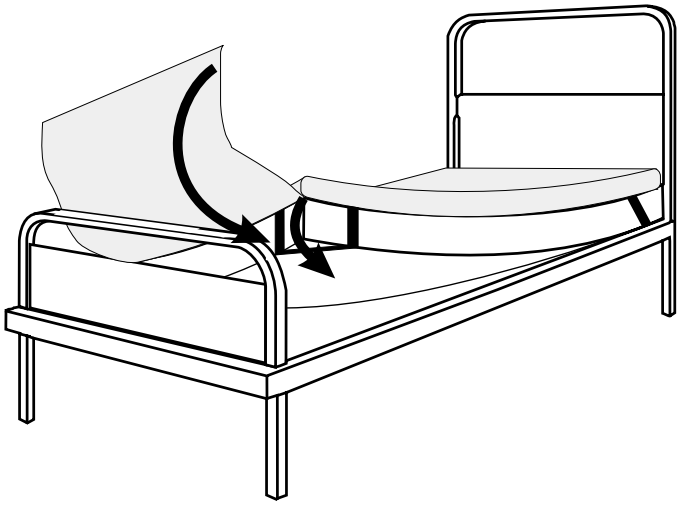
Caution

Do not use the overlay directly on the bed frame.

4. Place the **Autoexcel** overlay on the bed mattress with the air feed tube connector socket located near the pump at the foot of the bed, ensuring that the **Auto-Matt** sensor pad is flat and smooth and that the CPR swing label is hanging freely.

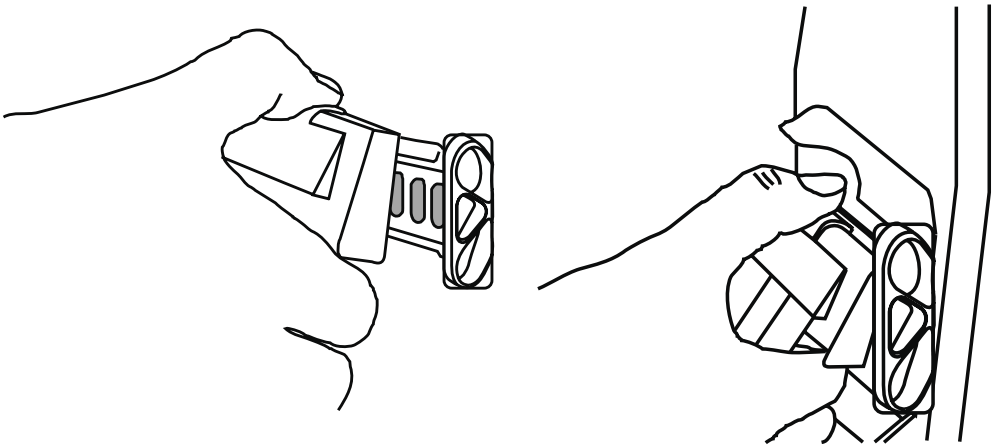


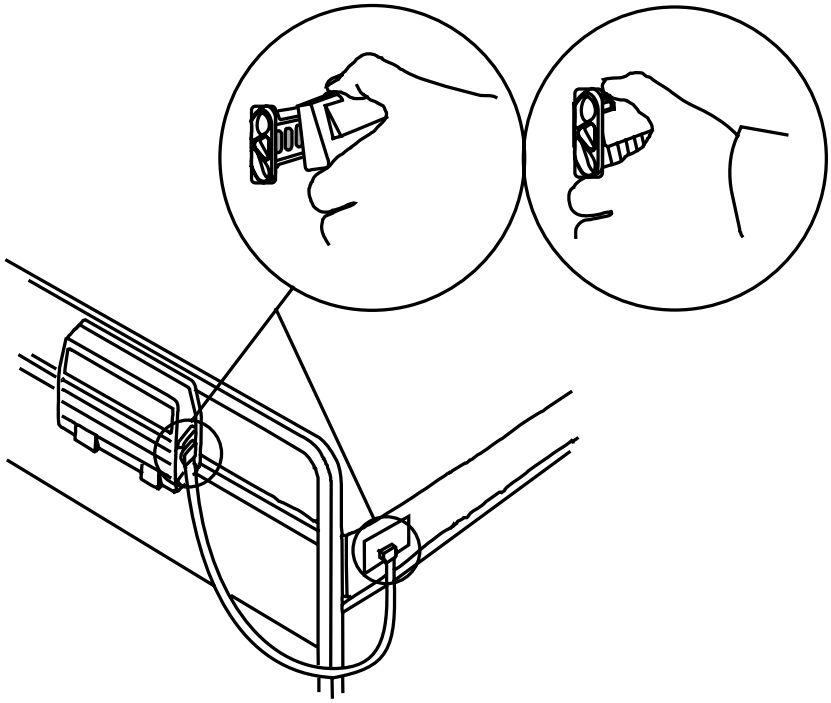
5. Ensure individual cells of the **Autoexcel** overlay are uppermost.



6. Secure the **Autoexcel** overlay by positioning the four straps under the corners of the bed mattress. Tuck the flaps under the bed mattress.
7. Place the protective cover sheet on the overlay and fix into position with the press studs provided.

8. Connect air feed tube connector/CPR to air outlet on pump unit and inlet on the overlay, ensuring that the tubes are not twisted. Push the connector in until it clicks into position.

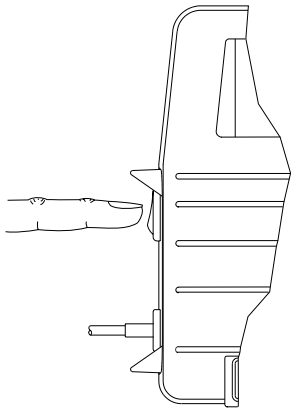




Correct Tube-set Connection

Inflating Autoexcel

1. Insert the mains power plug into the power socket.



2. Switch the pump **On/Off** switch to **ON**: the ON light on the front panel should illuminate.
3. The pump will now run a self test for approximately 3 seconds when all lights will be illuminated.
4. If the pump detects low pressure it will enter an inflation sequence with the **WAIT** message illuminated.

Once normal operating pressure has been reached, the **WAIT** light will switch off. It may take up to 20 minutes to fully inflate the **Autoexcel** overlay.

Testing the Power Fail Alarm

The power fail alarm is powered by a rechargeable battery.

The duration of the alarm will depend on the level of charge in the battery.

In use, it may have become discharged or reached the end of its life. It is therefore recommended that the alarm be tested before use.

1. Connect the pump to the mains, switch on and allow to run for 10-15 seconds.
2. Remove the mains power at the wall socket without switching the pump off.
3. The alarm should operate within 10 seconds.

Caution

If the power fail alarm does not operate after this test, only use the pump under supervision to ensure that the power-on status is checked at regular intervals.

4. If the alarm does not operate, run the pump for 4 hours to recharge the battery.
5. Retest the alarm after at least 4 hours. Allow the alarm to operate for 2 minutes to ensure that it has been adequately recharged.
6. If the alarm does not operate for 2 minutes, call the service engineer.

Continue to use the pump only under supervision to ensure that the power-on status is checked at regular intervals.

All other alarms will continue to function as normal.

When rolling up the overlay after a period of use, always roll from the foot end.

5. Operation

These instructions cover day-to-day operation of the system. Other operations, such as maintenance and repair, should only be carried out by suitably qualified personnel.

System Optimisation

The **Autoexcel** system automatically compensates for patient weight distribution and position optimising the pressure relieving performance. To ensure that the pressure relieving properties are not impaired, the cover must not be pulled tight and any covering sheets are not fitted too tightly.

Silencing Audible Alarms

Audible alarms can be silenced using the **MUTE** pushbutton. To silence an alarm simply push the **MUTE** button once.

CPR Control

IMPORTANT

In the event of cardiac arrest, disconnect the tubeset connector at the foot end of the overlay.

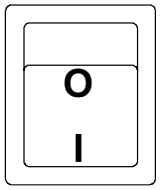
A swing label indicates the position of the connector in the event of bed covers obscuring the tubeset location.

The overlay will deflate sufficiently for CPR procedures to commence within 10 seconds of disconnection.

Controls, Indicators And Alarms

Controls

On/Off Switch
(And Alarm Reset)



Situated on the side panel of the pump, this switches the mains power on and off. It is combined with an internal battery circuit that will activate the alarm system if the power supply is interrupted prior to switching off. Examples are accidental mains lead removal or mains power failure.

ON

A green light on the front panel indicates that the power is **ON**.

MUTE

An audible alarm mute is provided to cancel audible warning sounds during an alarm condition. The yellow light is illuminated when the alarm has been silenced.

WAIT

If the pump detects low pressure in the overlay, the **WAIT** indicator is illuminated and the pump performs a start up procedure to inflate the overlay.

Once correct operating pressures have been reached the **WAIT** indicator goes out.

ALARM

The pump unit incorporates a sophisticated alarm detection system to differentiate between patient movement and genuine alarm conditions. Whenever an alarm occurs, the flashing red indicator is illuminated. Additionally, an audible warning will sound unless cancelled by the **MUTE** button as described earlier.

Once an alarm has been initiated, it can only be cancelled by switching the pump unit off and then switching back on.

For possible causes for the alarm, see the table in Section 7.

6. Cleaning

The following guidelines have been established in accordance with infection control procedures. Should you have any questions regarding cleaning or if you require further information please contact our Customer Services Department or your local Huntleigh Healthcare representative.

Caution

Gloves and protective clothing should always be worn when carrying out cleaning procedures.

During Use

The mattress, pump and tube set should be cleaned weekly using a damp soft cloth and mild detergent.

The pump can then be wiped with a sodium hypochlorite or sodium chloroisocyanurate (NaDCC) solution to a dilution of 1000ppm.

Hypercarbonate and phenolic based cleaning solutions should never be used.

The mattress cover can be easily unzipped for complete removal, laundering or sterilisation. The mattress can be cleaned in the normal way using soap and water. Heavily soiled mattresses can be cleaned with a sodium hypochlorite or sodium chloroisocyanurate (NaDCC) solution to a dilution of 1000ppm before laundering.

Never use Phenol based solutions as these will damage the surface coating.

If there appears to be staining or body fluids on the mattress cells they can be treated using a sodium hypochlorite solution or sodium chloroisocyanurate (NaDCC) to a dilution of 1000ppm.

The tube-set should be thoroughly cleaned with soap and water followed by sodium hypochlorite or sodium chloroisocyanurate (NaDCC) solution to a dilution of 1000ppm.

Laundering

The top cover should be laundered in accordance with washing of hospital soiled linen procedures.

Temperatures must be maintained at 80° centigrade (176°F) for a minimum of 3 minutes through the disinfection stage followed by rinsing and extraction.

Overlay Cover

The cover can be washed and thermally disinfected in a washing machine. The recommended temperature is 80°C.

Laundry Washing Cycle

Industrial	Break wash	Cold	10 minutes
	Main wash	65°C (149°F)	10 minutes
	Main wash 2	80°C (176°F)	3 minutes
	Extraction		2 minutes
	3 Cold Rinses		
	Extraction		5 minutes
Domestic	Prewash	Cold	
	Main Wash	71°C (160°F)	10 minutes
	Extraction		2 minutes
	Cold Rinses		
	Extraction		5 minutes

TUMBLE DRYING OR TUNNEL DRYING IS NOT RECOMMENDED.

Overlay Base And Cells

The base and cells can be wiped over with a solution of sodium hypochlorite 1000ppm or any other non-phenolic germicidal solution.

Disinfection

Temperatures must be maintained at 80°C (176°F) for a minimum of 3 minutes through the disinfection stage followed by rinsing and spinning.

Pump

WARNING

Switch off the electrical supply to the pump and disconnect the power cord from the mains supply before cleaning and inspection.

Cleaning

The pump casing is manufactured from plastic and should be cleaned using a damp soft cloth dampened with a mild detergent. This can be followed by a sodium chloroisocyanurate (NaDCC) solution to a dilution of 1000ppm.

Do not use abrasive compounds or pads.

General Care, Maintenance And Inspection

Check all electrical connections and power cord for signs of excessive wear.

Test power fail alarm system before use. For procedure, see **Installation** section.

In the event of the pump being subjected to abnormal treatment, e.g. immersed in water or dropped, the unit must be returned to an authorised service depot.

Maintenance

The equipment has been designed to be virtually maintenance-free between service periods. It is recommended that the pump is serviced annually by a Huntleigh Healthcare authorised service agent.

Servicing

Huntleigh Healthcare will make available on request service manuals, component parts lists, and other information necessary for Huntleigh Healthcare trained personnel to repair the system.

7. Troubleshooting

The following table provides a trouble shooting guide for the **Autoexcel** system in the event of malfunction.

Indicator	Possible Problem	Possible Cause	Remedy
WAIT ● CONTINUOUS		The pump is inflating the overlay.	This indicator will go out when operating pressure is reached.
ALARM ● FLASHING	LOW PRESSURE	The tube-set is not connected properly. There is a leak in the system.	Check connections and resecure. Call service engineer.
	HIGH PRESSURE	There is a block in the pneumatic circuit. Tube set blocked.	Check in bottom layer of overlay that **Auto-Matt** is flat and not kinked. Check for kinked tube.
	POWER FAIL	No mains power	Check plug and socket. Check for power cut.
	PUMP FAULT	Dynamic valve fault.	Call service engineer.
ALARM ● CONTINUOUS		Control board fault.	Call service engineer.

Fuse Replacement If the system fails to operate when plugged in and switched on, the fuses situated above the mains inlet socket on the pump should be checked. To do this, disconnect the pump from the main power supply and remove fuse holder cap using a suitable screwdriver.

Important

To protect against fire hazard, replace blown fuse with identical type and rating - 500mA quick blow. If the fuse blows again contact a service engineer or suitably qualified personnel.

8. Warranty

Huntleigh Healthcare's standard terms and conditions apply to all sales. A copy is available on request. These contain full details of warranty terms and do not limit the statutory rights of the consumer.

For service, maintenance and any questions regarding this, or any other Huntleigh Healthcare product, please contact:

Huntleigh Healthcare
310 – 312 Dallow Road
Luton Beds LU1 1TD UK

Tel: 01582 413104
Fax: 01582 459100

or your local distributor.

9. Routine Checks

Overlay

1. Remove top cover and inspect for signs of wear or any tears.
2. Check all cover fasteners are secure.
3. Check integrity of all connectors including cell to manifold and sensor pad to inlet plate.
4. Ensure all cell fasteners are snapped to the base sheet and are not loose or faulty.

Pump

1. Check the outer casing of the pump unit for damage.
2. Examine the mains supply lead of the pump unit for signs of wear/ damage.
3. Test power fail alarm system before use. For procedure, see **Installation** section.

10. Technical Description

Pump	AU.1000	AU.1000/J/50	AU.1000/J/60
Supply Voltage:	240 Vac	100 Vac	100Vac
Supply Frequency:	50Hz	50Hz	60Hz
Electrical rating:	15VA		
Fuse rating:	F500mA		
Size:	Length 336mm (13.2") Height 210mm (8.3") Depth 100mm (4")		
Weight:	3.5kg (7.7lb)		
Case material:	ABS/polycarbonate alloy		
Air inlet filter:	Service replaceable		
Operating cycle:	10 mins.		

Electrical Safety Standards

IEC601-1
BS5724, Part 1
VDE 0750 : Teil 1
UL544

Degree of protection against electric shock: Class I, type BF

Degree of protection of ingress of liquids: Ordinary (not protected)

Mode of operation: Continuous

Symbols

~ alternating current

O (Off) power disconnection from the mains supply.

I (On) power connection to the mains supply.

Type BF

Tube Set

Length:	1 metre (39.4")
Material	
Tube:	5-way moulded PVC
Connectors:	Moulded nylon

Environmental Conditions

Operating

Temperature range:	+10°C to +40°C
Relative humidity:	30% to 75%
Atmospheric pressure:	700hPa to 1060hPa

Storage

Storage temperature range:	-40°C to +70°C
Relative humidity:	10% to 100% (non-condensing)
Atmospheric pressure:	500hPa to 1060hPa
Environmental Protection:	Please dispose of this unit in accordance with local regulations.

Overlay AU-1020

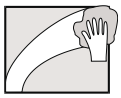
Size:	Length 1980 mm (78") Height 135 mm (5.3") at edges 100 mm (4") at centre Width 850 mm (33.5") approx.
Weight:	5kg (11lb)
Cover material:	Polyurethane coated knitted fabric
Base material:	Polyurethane coated woven nylon
Cell material:	0.3mm (0.012") Polyurethane flexible sheeting

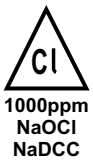
Wash at 176°F (80°C)

Do not iron

Do not use phenol-based cleaning solutions

Do not tumble dry


Wipe surface with damp cloth



Use solution diluted to 1000 ppm

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A *Pyramid of Care*® Product

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